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PATCHTOP TIMBER SALE PROPOSAL
ENVIRONMENTAL ASSESSMENT

SECTIONS 3, 4, 5, 9, 10 & 11-T13S - R2W

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DILLON UNIT OFFICE
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DILLON, MT. 59725

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CHAPTER I – PURPOSE/MANAGEMENT OBJECTIVES

A. Purpose

The Montana Department of Natural Resources and Conservation (DNRC) proposes to initiate forest management and timber harvesting on state school trust lands in the Patchtop area. The Patchtop Timber Sale proposal is located in Sections 3, 4, 5, 9, 10 & 11, T13S – R2W, approximately 50 air miles southeast of Dillon, Montana, in Beaverhead County.

The project proposal would address the management of Douglas-fir, Engelmann spruce, subalpine fir and lodgepole pine timber on approximately 106 total acres. The estimated harvest volume would be 1,130 thousand board feet contained within 5 units. Reconstruction of 1.2 miles of existing road and construction of 2.6 miles of minimum standard road would be needed on the State ownership. Access to the State section would require the crossing of private lands and involve the reconstruction of 0.9 miles of existing road and construction of 0.2 miles of minimum standard road. The proposed action would be implemented in the spring of 2004 and completed by December 2007.

B. Project Need

The lands involved in this proposed project are held by the State of Montana in the trust for the support of specific beneficiary institutions such as public schools, state colleges and universities, and other specific state institutions such as the school for the deaf and blind (Enabling Act of February 22, 1889, 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the Department of Natural Resources and Conservation are required by law to administer these lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA).

C. Project Objectives

The Department has set the following project objectives:

1. Promote a diversity of stand structures and patterns for a long-term sustainable forest.

2. Maintain a semblance of historic forest conditions.
3. Generate revenue for the school trust through the harvest of timber from the project area.

D. Relationship to the Administrative Rules for Forest Management

In March 2003, DNRC adopted the Administrative Rules for Forest Management ARM 36.11.401 through 36.11.450 (the "Rules"). This project is planned under the requirements of the Rules.

E. Other Environmental Reviews Related to the Project

In June 1988, The Centennial/Muddy Creek Land Exchange Environmental Assessment was prepared.

In 1991, the Beaverhead National Forest prepared the Gravelly Sagebrush FEIS on the West Fork of the Madison.

In 1994, the Beaverhead National Forest completed the West Fork Grazing Environmental Assessment on the West Fork of the Madison.

In May 1996, The Tepee Creek Timber Sale FEIS (DNRC/Dillon Unit) was completed with record of decision. The project involved school trust land parcels, Sections 1, 2, 3 & 4-T13S-R1W (Tepee Creek) and is located in the Gravelly Range, approximately 6 air miles east of the Patchtop project area. 1,524 MBF of predominately lodgepole pine was harvested from 238 acres of State of Montana ownership from 1997 to 1999.

F. Other Agencies with Jurisdiction

The preferred access would require a temporary road use agreement to use 0.9 miles of existing road requiring minor reconstruction and construct 0.2 miles of minimum standard road on private ownership in Sections 10 & 11-T13S-R2W, east of the State tracts. A temporary agreement with the private party has been secured.

Any activity that disturbs the naturally occurring vegetation is subject to review by the local County Weed Board. The DNRC has a Revegetative and Weed Management Plan on file with the County Weed Board. If an Action alternative is selected, the DNRC would file a site specific Weed Management Plan with the Weed Board.

A Stream Preservation Act Permit (124 Permit) is required for activities

conducted by any government agency in a stream. The Action alternative proposes culvert installations that would require a 124 permit. Should the Action alternative be selected, a 124 permit will be applied for and the State will abide by all requirements.

The activity of burning slash would involve two agencies. Surface vegetation in Beaverhead County falls under County jurisdiction. Burning permits are usually required. The Department of Environmental Quality regulates air quality. DNRC is a participant in the Montana Air Shed Coordinating Group planning effort to limit particulate production.

G. *The Decisions To Be Made*

There are two decisions that need to be made regarding the alternatives.

The first is to decide which alternative would best meet the project objectives.

The second decision is whether this Environmental Assessment adequately identifies the potential impacts of the selected alternative and the potential for those impacts to be significant.

H. *Initial Scoping and Public Involvement*

The public involvement process began with the publication of a Legal Notice in the Dillon Tribune on August 7 and 21, 2002 and the Montana Standard on August 11 and 18, 2002.

Individual scoping notices were sent on July 15, 2002. (see List of Individual Scoping Notices)

I. *Resource Concerns*

Responses were received from the following:

DNRC Specialists
Montana Fish, Wildlife and Parks (FWP)
Bureau of Land Management
Beaverhead-Deerlodge N. F.
Skyline Sportsmen's Association
The Ecology Center

R-Y Timber, Inc.

The following concerns and issues were compiled from scoping responses for this proposed project.

- Elk Security and Vulnerability
- Wildlife Habitat
- Fragmentation/Corridors
- Public Access

J. Issues

Elk Security and Vulnerability

There is a concern that the proposed harvest of timber and road construction may reduce elk security cover and increase hunter access. This may increase the number of bull elk harvested during the first week of the hunting season, and that may subsequently require the FWP to further restrict hunter opportunity in the area.

K. Other Concerns

Additional concerns were considered but did not drive the development of Alternatives.

1. Wildlife Habitat

The general issue of wildlife habitat was brought up, but not in relation to any particular species. The one specific wildlife issue is elk habitat, which is addressed in this EA. Wildlife species that are considered threatened, endangered and sensitive species will be addressed in this analysis.

2. Fragmentation/Corridors

This is a secondary issue but will be addressed in this analysis.

3. Public Access

A concern was raised regarding public access, proposing the opening of the existing road on State lands to motorized vehicle travel to provide access from the Landon Camp Ridge road to public lands in the Patchtop Mountain vicinity.

Although this road is currently being used by the public, it is administratively closed to motorized vehicle use for recreational purposes. The road will remain closed to meet departmental management objectives for resource protection and assist with FWP elk management goals.

These issues and other resource concerns will be addressed in further detail in Chapters III and IV of this document.

CHAPTER II - ALTERNATIVES

A. *Introduction*

This chapter explains how the alternatives were developed, and describes the No-Action alternative, the Action alternative, and the alternatives that were considered but not given detailed study and dismissed.

B. *Development of Alternatives*

Some of the issues identified above led to the development of mitigation measures that can be incorporated into the Action Alternative.

The No Action Alternative is evaluated as the basis for comparing the Action Alternative to the option of not conducting the project.

C. *Description of Alternatives*

1. *Mitigation Measures for Action Alternative*

- a. All new road construction is designed to meet minimum standard specifications.
- b. At the end of the project, segments of the new road construction on the State of Montana ownership are to be physically closed at designated locations so they are impassable to motorized vehicles. Partial road obliteration and logging slash and brush will be the used, where practical, to discourage foot traffic along the right-of-way, then seeded with weed free grass seed.
- c. All road reconditioning would be designed to bring the existing haul routes up to BMP standards. The reconditioning would consist of minor blading, reshaping road drainage improvements where needed and construction of additional road drainage to reduce potential sedimentation problems.

- d. The access route through private land would be acquired for the sole purpose of implementing this proposal and is not designated for public access purposes.
- e. The timber sale agreement will require any damaged improvement to be repaired or replaced.
- f. Soil scarification will be kept to a minimum to limit potential noxious weed, soil and watershed impacts and meet silvicultural goals.
- g. Retention and distribution of 5 to 10 tons per acre of woody debris greater than 3" in diameter is planned for nutrient recycling and soil wood recruitment. This measure is meant to maintain soil productivity, seedling micro-climate, habitat for some species of small mammals, and old growth stand attributes.
- h. Road construction will be minimized and located on the most stable ground feasible. All proposed road construction will be reviewed by soil and hydrology specialists for site specific mitigation designed to maintain slope stability.
- i. Road use and equipment operations during the harvest and post harvest activities will be limited to dry, frozen or snow covered ground conditions.
- j. Road drainage features will be installed concurrent with the construction and will be maintained throughout the course of the project.
- k. To minimize compaction and soil displacement, slash disposal methods would be limited to a combination of whole tree skidding, lopping and scattering, trampling, and possibly jackpot burning.
- l. All newly disturbed soils on road cuts and fills and recontouring measures would be promptly seeded to site adapted grasses to reduce weed encroachment and stabilize roads from erosion.

- m. To discourage introduction of weeds, all road construction and logging equipment will be power washed and inspected prior to being brought on site.
- n. DNRC would monitor the project area for two years after the completion of the harvest activities to identify if noxious weeds occur on the site. If noxious weeds do occur, a weed treatment plan will be developed and implemented.
- o. All current Forestry Best Management Practices (BMP's) would be implemented as they pertain to the action alternative in the Environmental Assessment.
- p. All current Streamside Management Zone (SMZ) Laws and procedures would be followed as they pertain to the action alternative.
- q. If cultural resources, sensitive species, or threatened or endangered species are found in the area, the project would be suspended, pending further analysis by the appropriate resource specialist.
- r. One snag and one snag recruit per acre, > 21" dbh, will be retained where applicable. Cull live trees and cull snags will be retained where applicable. Douglas-fir relic trees will be retained where applicable.
- s. Road construction and logging activities will be limited to two years with an operating season from June 15th – November 15th.
- t. A 200 foot visual screening area will be maintained along Snowshoe Creek. Harvesting will be permitted but restricted to retention requirements for a Class 1 stream, as provided under the Stream Management Zone Law, for the entire visual screening area. Protect and retain submerchantable trees and shrubs within harvest units to the fullest extent possible.

2. ***Alternatives Considered In Detail***

There are 2 alternatives under consideration, including a no action alternative.

Alternative A – No Action

This No Action Alternative would not allow timber harvest, new road construction or road improvement activities. No revenue would be generated from timber harvest treatments. Revenue from licensed grazing and recreational activities would continue.

Alternative B – Action Alternative Patchtop (Harvest Units 1, 2, 3, 4 & 5)

Under this alternative, DNRC would harvest 5 units ranging in size from 14 to 27 acres, removing 1,130 MBF of sawtimber from a total of 106 acres. Harvest methods would employ traditional ground based yarding. Stand treatment would be primarily a group selection/ selection harvest in Douglas-fir and Douglas-fir/mixed conifer stands removing 60% of the merchantable volume and a regeneration harvest in stands composed predominantly of spruce and subalpine fir, removing up to 90% of the merchantable volume (see MAP II-1).

An estimated 2.8 miles of new road would be constructed and 2.1 miles of existing road reconstructed. Two dry crossings and three wet crossings would require culverts. Two of the wet crossings would be removed at the completion of the project.

Access would be through a private landowner requiring a temporary road use agreement and Landon Camp Ridge county road.

Road closure on state ownership would consist of partial obliteration, debris and slash placement, and seeding. Road closure on private ownership would consist of seeding and closure to the public.

3. ***Alternatives Considered but Dismissed***

During the preliminary stages of the proposed project, two additional alternatives were considered.

The first alternative was developed in response to concerns relating to elk security. Units 1 and 2 would have been proposed for harvest while units 3, 4 and 5 would have been deferred from harvest for approximately twenty years. Due to logging, hauling and development costs, and the present lumber market, it would not be economically feasible to address only units 1 and 2. Additionally, deferment of proposed units 3, 4 and 5 would delay harvest for only twenty years, having a short-term influence on hiding and security cover.

The second alternative involved the relocation of an improperly buried water line, located in proposed units 2 and 5, to facilitate access to an additional 20 acres of timber. To insure the integrity of the waterline during the proposed harvest activities and any future management, it was determined the line should be relocated out of the forested areas. Revenue from the proposed timber harvest would generate ~30% of the total estimated cost of the relocation. Due to the economical constraints, logistical burden, and hiding and security cover considerations, this alternative was rejected.

Road Alternatives

One additional access route, utilizing State lands, was considered. This alternative would have also used the proposed existing access on State lands in Section 11-T13S-R2W but instead of crossing onto private lands, would have continued on State ownership. An additional mile of new road construction, over predominately steep (50%+) and rocky terrain, combined with steeper road grades (10%+) would have been necessary to make this route viable.

Due to excessive soil disturbance, additional new road construction and costs, this alternate route was found to be economically and environmentally undesirable.



PROPOSED PATCHTOP TIMBER SALE
Sections 3, 4, 5, 9, 10 & 11-T13S-R2W

ALTERNATIVE B - ACTION ALTERNATIVE

- | County Road | Reconstruction | New Construction | Harvest Unit |
|-------------|----------------|------------------|--------------|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 |
| 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 |
| 45 | 46 | 47 | 48 |
| 49 | 50 | 51 | 52 |
| 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 |
| 65 | 66 | 67 | 68 |
| 69 | 70 | 71 | 72 |
| 73 | 74 | 75 | 76 |
| 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 |
| 85 | 86 | 87 | 88 |
| 89 | 90 | 91 | 92 |
| 93 | 94 | 95 | 96 |
| 97 | 98 | 99 | 100 |

1" = 1,955'

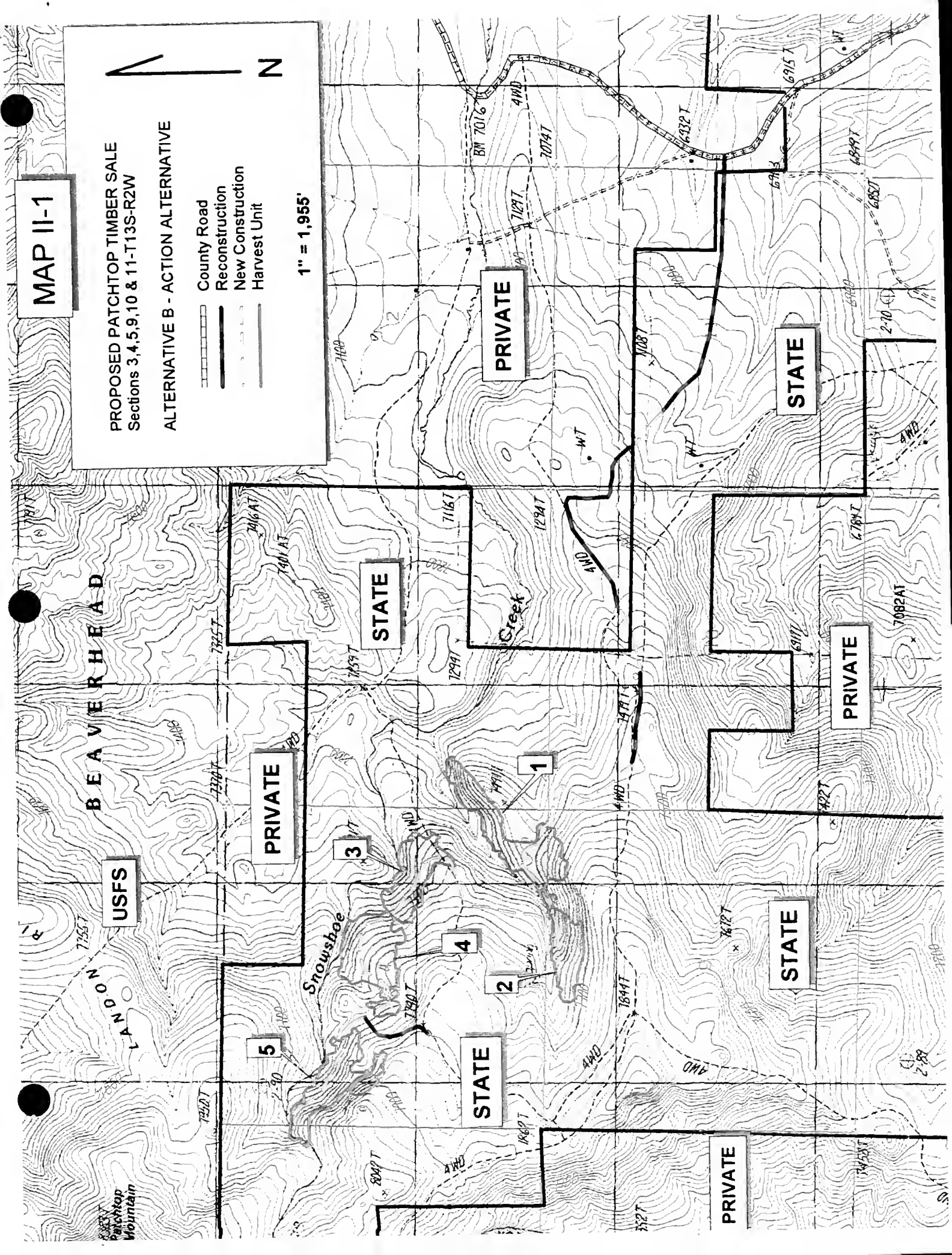




TABLE II - 1 Summary of Treatments by Harvest Unit

UNIT #	ACRES	NET VOLUME MBF	ESTIMATED % HARVEST VOLUME	TYPE OF HARVEST	ESTIMATED LEAVE TREE VOLUME MBF	ESTIMATED HARVEST VOLUME MBF
1	27	432	60%	GROUP SELECTION SELECTION	172	260
2	14	224	60%	GROUP SELECTION SELECTION REGENERATION HARVEST	89	135
3	19	332	65%	GROUP SELECTION SELECTION REGENERATION HARVEST	117	215
4	26	468	65%	GROUP SELECTION SELECTION REGENERATION HARVEST	164	304
5	20	360	60%	GROUP SELECTION SELECTION REGENERATION HARVEST	144	216
TOTALS	106 ACRES	1816 MBF	AVE % HARVEST =62%		686 MBF	1130 MBF

TABLE II-2: Summary of Alternatives and Effects

INDEX OF MEASURE	NO ACTION ALTERNATIVE	ACTION ALTERNATIVE
Estimated Harvest Acres	0 acres	106 acres
Estimated Harvest Volume	0	1130 MBF
Number of Harvest Units	0	5 units
New Construction	0 miles	2.8 miles
Reconstruction	0 miles	2.1 miles

Proposed Activity or Environmental Component	No Action Alternative	Action Alternative Patchtop Units 1, 2, 3, 4 & 5
Impacts on Vegetation		
Cover Types	Gradual increase of shade tolerant species.	Reduction of Douglas-fir and spruce/ subalpine fir cover type. Gradual increase of shade intolerant species.
Successional Stages	Slow trend toward climax. Forests remain older than would be expected.	106 acres of Douglas-fir and spruce/ subalpine fir cover types moved to a younger age structure.
Old Growth	Higher representation of older stands over historic levels would continue.	Older stands would be moved to more historic conditions while still retaining the old growth attributes of the stands.
Insect and Disease	Potential mortality from insect and disease infestations expected to slowly increase as stands increase in age.	Reduction of susceptibility to insect and disease on the treated acres by reducing over stocking and relieving competition.
Sensitive Plants	No impacts anticipated	
Noxious Weeds	Weeds may establish presence on existing 4x4 roads.	Integrated Weed Management Plan to develop a prevention and monitoring plan to address potential introduction of weeds on site. Includes power washing equipment, reseeding disturbed sites and a two year monitoring period for detection and control. A minimal increase in risk to weed establishment is expected.

Impacts to Watershed and Soils		
Water Yield	No increase in water yield.	No detectable increases in water yield anticipated.
Sedimentation	Continued impacts due to existing conditions.	Additional drainage features will be constructed on selected segments of existing roads No impacts anticipated to downstream beneficial uses associated with the proposed project.
Fisheries	Continued impacts due to existing conditions.	Additional drainage features will be constructed on selected segments of existing roads. No impacts anticipated associated with the proposed project.
Soils	Inadequate drainage only partially meet BMP's.	Implementation of mitigation measures will minimize impacts and maintain long-term productivity.
Impacts to Wildlife		
Elk Security	No immediate change	Moderate decreases to Elk Security anticipated
Elk Vulnerability		Low to moderate proportional increases in Elk Vulnerability anticipated.
Bald Eagle	No Impacts	Habitat found within the project area is not suitable and too distant to provide ample foraging opportunities. No impacts are anticipated.

Gray Wolf	No Impacts	Size and nature of proposed harvest and associated activities are not expected to effect wolves or recovery efforts. Should a den be located within one mile of any proposed harvest units, activities would cease and a DNRC biologist would be contacted for implementation of site-specific mitigation measures.
Canada Lynx	No Impacts	Lynx habitat is marginal due to the lack of desirable habitat conditions for lynx and their primary prey, snowshoe hares. No impacts are anticipated.
Grizzly Bear	No Impacts	Due to the relatively poor habitat quality present, the likelihood of bears spending appreciable time in the project area or cumulative effects analysis area is low. Newly constructed roads could reduce existing levels of security. All new roads will be blocked following treatment to minimize access. Adverse impacts are expected to be minimal.
Flammulated Owl	No impacts	Cover types characteristic of this area are not preferred habitat for flammulated owls. No impacts are anticipated.
Peregrine Falcon	No impacts	No cliff features suitable for use by nesting peregrine falcons occur within one mile of the project area. No impacts are anticipated.
Sage Grouse	No impacts	No sage grouse breeding leks are known to occur within the cumulative effects analysis area or project area. Should sage grouse be present in the vicinity of the project area, any effects to habitat or disturbance-related effects would be expected to be minimal, due to the late start-up date of activities (i.e., June 15), and preferred sagebrush habitat would not be appreciably altered. No impacts are anticipated.

CHAPTER III - AFFECTED ENVIRONMENT

A. *Introduction*

This chapter presents the aspects of the affected environment that are relevant to the issues identified in Chapter II.

B. *Background*

1. Forest Vegetation:

The proposed harvest area is located in the northeast end of the Centennial Valley along the southern portion of the Gravelly Range. State ownership within the project area is 2,560 acres of which 200 acres are forested. Adjacent ownership to the north is the Beaverhead-Deerlodge National Forest, the remaining adjacent ownership is predominately private with a few scattered BLM lands. The northwest boundary of the Red Rock Lakes National Wildlife Refuge lies three miles to the south of the project area.

Lands within the proposed project area occur in open, rolling country with generally broad and gentle ridge tops. Slopes range from 15-60% with an elevation range of 7,200 feet to 8,000 feet. The area is primarily grasslands (~90%) with isolated patches of timber (~10%). Dense mature forest comprises ~112 acres, while open mature and younger forest comprises ~88 acres of the state parcels.

Stands of timber occur predominately on north facing slopes. Douglas-fir is the climax dominant on the drier sites, generally located on the middle and upper slopes of the stands. Accidentals such as subalpine fir, limber pine, spruce and lodgepole pine may also be represented. These sites are Douglas-fir/elk sedge habitat type (Psme/Cage) and are generally <150 years of age containing scattered old remnant trees and clumps. Stand composition ranges from dense mature forest to heavily overstocked and stagnant forest to open mature and young forest. Regeneration is sparse with little understory vegetation or coarse woody debris present.

The lower slopes of the stands, especially near riparian areas, are moister sites with subalpine fir the apparent climax species but

spruce and Douglas-fir tend to dominate the stands as major serals. Lodgepole pine is also sparsely represented. These sites are primarily a subalpine fir/arnica habitat type (Abla/Arco) and are <150 years of age. The stands are comprised of densely-stocked and moderately-stocked timber >10" dbh and scattered old remnant trees and clumps. Regeneration and understory vegetation is light with moderate to heavy coarse woody debris.

Older trees (>150 years), predominately Douglas-fir, occur throughout most of the stands in small pockets and scattered individual trees. Some small patches of old growth (>5/<10 acres) are found within the project area. Large snags and suitable snag recruitment trees (>21" dbh) are available.

Encroachment occurs readily along edges of mature forest into areas that were non-forested grasslands around the turn of the century.

Common understory species include: snowberry, big sagebrush, elk sedge, basin wild rye, *Festuca* spp., *Potentilla* spp., lupinus spp., arnica, common juniper and wild strawberry.

2. Cumulative Impacts and Harvest History:

Evidence of past harvesting within State ownership is visible in all units. These activities were minor, removing of a few scattered trees or clumps and occurred over fifty years ago. Past and ongoing management activities in the project area drainages include grazing and fire suppression. No timber harvest activities have occurred over the last 25 years within the Watershed Analysis area. Grazing is the predominate management activity, with the bulk of the activity concentrating in the riparian areas.

3. Fire History / Ecology:

Stands within the project area fall into fire groups 5 and 8 (Fischer and Clayton 1983) and have mean fire intervals ranging from 10 to 40 years on the drier sites to about 50 to 110 years on the cooler sites. Fuel loadings on the drier sites are typically 15 tons/acre and the moister sites are typically 25 tons/acre but can easily exceed this.

Historically, the drier sites ranged from low intensity ground fires to intense, mixed-severity events (Losensky 1997), which

maintained mature stands in scattered patches and a more open condition. The alpine fir/spruce sites had very few overmature stands (<1% of the area) due to the small riparian areas it occupied combined with the more frequent fire intervals occurring in adjacent stands.

The presence of scattered old, open-grown Douglas-fir were likely the result of frequent fires burning at lower intensities on gentle slopes (Losensky 1997) and indicate that much of the project area was likely influenced by relatively frequent fire events. Thus, the presence and absence of forest and grassland patches would have been dynamic, shifting through time. Periodically, sites where conifers presently occur would have appeared more as grassland than forest. Surviving individual trees and clumps of trees in cool areas and gentle ridge tops served as seed sources that would have promoted the periodic regeneration of trees that may or may not have survived subsequent fire events. Historic fire events likely contributed to a naturally fragmented, open-park type community of forest stands at the landscape scale.

Existing Douglas-fir, subalpine fir, and Engelmann spruce trees that are less than 150 years old appear to represent forest encroachment due to forest succession and lack of fire disturbance during the past century. Fire suppression efforts have led to an increase in forest cover over the past 100 years. This is readily seen with comparisons of photographs taken in the late 1800's/early 1900's with photographs taken in the 1980's (Gruel 1983) showing a significant increase in forest cover.

4. Insect and Disease:

Currently the forested acres within the project area do not display any serious insect or disease problems. A light infestation of Spruce Budworm and fir broom rust is present. Cytospora canker is also affecting pockets of spruce. However, high stand densities, multi-storied stand structure, and climax host species are present and elevate the risk of more serious insect and disease outbreak.

5. Successional Stages:

Within climatic sections of Montana, Losensky (1997) estimated the age structure of each forest cover type that may have existed in

1900 by backdating inventory data. The project area falls under Losensky's (1997) climatic section 13 (Section M332E), which encompasses the southwest corner of Montana and the upper Salmon and Lemhi drainages of Idaho, and includes Beaverhead and Madison Counties.

In this climatic section, forested cover types were historically found on about 39% of the area, with the remainder being grassland and shrubland. At the turn of the century, 10% of the timber in the climatic section and 19% of the Beaverhead and Madison County timber was old forest >150 years old

Current forest inventory data on State lands in the Beaverhead and Madison Counties can be used to compare the current age structure of each forest cover type to Losensky's evaluation of conditions that existed in 1900. A complete stand level inventory of all the forested State lands in Beaverhead or Madison County is presently not available. An estimate of age structure is available on approximately 67% of the forested State lands. However, the data available is on the majority of lands that have potential for timber harvest activity and therefore would tend to represent stands that have had human disturbance during the last century and consequently younger age classes are likely represented. Table III -1 displays Losensky's estimate and the current inventory estimate of age structure on the forested State land in the Beaverhead and Madison Counties. Comparison of the data in this table indicates the current age structure of the forested State lands is substantially older than would be expected from Losensky's data. Currently approximately 59% of the forested stands on State lands are greater than 100 years of age. Also, there is currently a greater than expected percentage (39%) of old stands on State land when compared to the historic estimate of 19% on all lands in 1900. High representation of old stands is consistent with the belief that modern fire suppression policies have limited the natural disturbance role played by fire in this region and that human caused disturbances have not approached historic levels of disturbance.

TABLE III – 1: Percentage of area by cover type and age class for Beaverhead and Madison Counties. Historic figures are from Losensky (1997) and represent an estimate of conditions that existed in the year 1900 in Beaverhead and Madison Counties. Current figures are extrapolated from the DNRC inventory, which consists of stand data collected from 67% of the estimated forest area on state land in Beaverhead and Madison Counties.

COVER TYPE (STAND AGE IN YEARS)		NON-STOCKED & SEEDLING/ SAPLING (0-40)	POLE (41-100)	MATURE (101-OG)	OLD GROWTH (OG)
DOUGLAS-FIR	HISTORIC	33%	28%	13%	26%
	CURRENT	6%	26%	21%	47%
SPRUCE-FIR	HISTORIC	4%	41%	22%	33%
	CURRENT	2%	38%	23%	37%
LODGEPOLE	HISTORIC	50%	41%	8%	1%
	CURRENT	22%	39%	16%	23%
AVERAGE OF FOREST	HISTORIC	34%	34%	13%	19%
	CURRENT	10%	31%	20%	39%

6. Old Growth:

The Rules state that DNRC shall manage old growth to meet biodiversity and fiduciary objectives, and shall consider the role of all stand age classes in the maintenance of biodiversity when designing harvests and other activities.

In the Rules, DNRC defines old growth as: forest stands that meet or exceed the minimum number, size, and age of those large trees as noted in "Old-Growth Forest Types of the Northern Region" by P. Green, J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann (1992, USFS Northern Region, internal report).

Old growth stands do occur within the project area but are generally small (>5 acres/<10 acres) and scattered. More commonly found are scattered individuals and small clumps of old relic trees. Historically, these remnants were typically naturally fragmented, open-park like communities maintained by frequent low intensity fires. The present percentage of old growth cover types on State lands is nearly twice the estimated percentage that is likely to have historically occurred on State lands in Beaverhead and Madison Counties.

7. Geology and Soils:

The project area is located on moderate to steep slopes with soils weathering from alpine glaciated, volcanic bedrock of the Huckleberry tuff formation. Volcanic bedrock is common at shallow depth and outcrops mainly along ridges and convex slopes should be avoided. The black and tan porous rock can be ripped, but may bring up rough boulders that make the roads difficult to grade, slow and bumpy. Localized limestone and tertiary age landslide deposits occur in the North ½ of section 4, but are not part of the proposed harvest units.

Predominant forest soils on convex slopes of 30 to 50% and ridges in area of proposed units are shallow to moderate depth, extremely stony loams and cobbly clay loams. Topsoils are 4-6 inches, cobbly silt loams and fine sandy loams, with ½ to 1 inch of duff. These soils are excessively well drained and droughty. Erosivity is moderate. Compaction hazard is a concern in spring when soils are wet. Soils have a relatively long dry or frozen season of use when operability should not cause adverse effects. Slopes up to 45% are well suited to ground based harvest methods. Primary concern for soil productivity is maintaining the shallow topsoils, by minimizing displacement and retaining a portion of woody debris for long term nutrient cycling.

Concave slopes of 15-35% have deeper, cobbly soils with higher clay contents and better site quality. Forest interpretations are similar for these soils. Timber productivity is estimated as moderate. Climate and moisture limit tree growth. Erosion potential for disturbed soils is moderate, except for steeper sideslopes. Erosion can be controlled by installing standard drainage features and grass seeding of trails where needed. Soil compaction potential is a concern when soils are wet. Localized area of low rock content and high clay soils near the stream in unit 5 has a low bearing strength and will require suitable fill from the adjacent area to provide adequate material for road construction.

No especially unique or unstable geology or soils occur in the project area.

8. Watershed and Fisheries:

The proposed timber sale includes five harvest units within the Snowshoe Creek watershed, which is a tributary to Tepee Creek in the Red Rocks drainage basin. Snowshoe Creek drains a 7,407-acre watershed, but flows are often discontinuous due to

subsurface flow. Due to its ephemeral nature, Snowshoe Creek does not support fish.

Access to the proposed harvest area will utilize existing county and private roads, with new road construction on State ownership.

The Snowshoe Creek watershed is mostly non-forested range and foothills. The forested region in the headwaters of the watershed is under State ownership and included in the project area. The lower portions of the watershed that are privately owned are used for agriculture and cattle grazing.

The Missouri River drainage including Snowshoe Creek is classified as B-1 in the Montana Surface Water Quality Standards. The B-1 classification is for multiple use waters suitable for domestic use after conventional treatment, growth and propagation of cold-water fisheries, associated aquatic life and wildlife, and agricultural and industrial uses. Among other criteria for B-1 waters, no increases are allowed above naturally occurring concentration of sediment, which will harm or prove detrimental to fish or wildlife. Naturally occurring includes conditions or materials present from runoff on developed land where all reasonable land, soil and water conservation practices have been applied. Reasonable practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses. The State has adopted Forestry Best Management Practices through its Nonpoint Source Management Plan as the principle means of controlling nonpoint source pollution from silvicultural activities.

Snowshoe Creek is not listed in either the 1996 or 2002 303(d) list, which is list compiled by the Montana Department of Environmental Quality (DEQ) of water quality limited water bodies. Although Upper Red Rocks Lake, which Snowshoe Creek is a tributary, is listed as water quality limited by the DEQ.

Existing direct, indirect, and cumulative impacts to water quality and associated beneficial uses within the project area are primarily associated with historic disturbances, including livestock grazing and the existing road systems. These impacts include channel instability, flow alteration, reduced channel functions and accelerated rates of fine sediment delivery.

A coarse filter approach was used to screen the affected watershed to determine existing conditions and to evaluate the potential for cumulative watershed impacts due to increases in water yield. Recent aerial photography was utilized to estimate the percentage

of drainage area forested and the extent of the existing timber harvests in watershed analysis area. The analysis also included field evaluations conducted to: 1) Determine the existing stream channel and riparian conditions, 2) identify potential in-channel sources of sediment, and 3) verify harvest information obtained from air photos.

Results of the coarse filter show that Snowshoe Creek watershed is approximately only 3.1% forested. Since this watershed is comprised of mostly non-forested range (96.9%) the effects of forested areas on stream water yield increases is very limited.

Detailed stream channel and sediment source surveys were completed on the State parcels within the affected watershed by a DNRC hydrologist and soil scientist. The purpose of these surveys was to identify and inventory all existing and potential sources of channel instability, erosion, and sediment delivery to the streams occurring on State land.

Access to the proposed harvest areas would be provided by an existing road system located on private and State lands, and several miles of new road construction on State land. Many of the existing roads do not fully comply with Best Management Practices (BMPs) due to the steep grades and lack of drainage features. However, the location of the existing roads is far from the stream and therefore poses little threat to direct sediment delivery to Snowshoe Creek.

The portion of Snowshoe Creek that flows through the State parcels is spring fed and perennial. However, the stream is intermittent immediately downstream of the project area. The downstream reaches of Snowshoe Creek only contribute surface flows to Tepee Creek during ephemeral storm flow and snowmelt events. Snowshoe Creek does not support fish.

TABLE III – 2: Watershed Existing Condition Analysis

Watershed	Drainage Pattern	Total Acres	Percent Forested	Percent Harvested
Snowshoe Creek	Perennial within Project Area	7,407	3.1%	0.0%

9. Fragmentation and Corridors:

Lands within the project area are comprised of foothills with slopes ranging from ~0-65%. Ridge tops are generally broad and gentle. Habitats are primarily grassland with small forest patches and interspersed rock outcrops, parks and meadows. Elevations in this parcel range from about 7,200 to 8000 feet.

The abundance of old trees with fire scars found on the project area indicates that founding trees and stands were likely influenced by relatively frequent fire events historically. The presence and absence of forest and non-forest patches would have been dynamic, shifting through time. Periodically, sites where conifers presently occur would have appeared more as non-forest meadows than forest. Surviving individual trees and clumps of trees in cool areas and gentle ridge tops served as seed sources that would have promoted the periodic regeneration of young-aged stands, that may or may not have survived subsequent fire events. Historic fire events likely contributed to a naturally fragmented patchy distribution of forest stands at the landscape scale. Historic fires, climate and land forms have contributed to the existing patchy distribution of dense, mature forest habitat. Existing forest cover exhibits a low level of habitat connectivity across a network of sparse to densely forested stringers and habitat patches. No known wildlife corridors of notable importance occur within the project or analysis area.

10. Threatened, Endangered and Sensitive Species:

Threatened and Endangered Species: Bald Eagle, Gray Wolf, Canada Lynx and Grizzly Bear.

DNRC Sensitive Species: Flammulated Owl, Black-Backed Woodpecker, Pileated Woodpecker, Northern Bog Lemming, Harlequin Duck, Peregrine Falcon, Mountain Plover, Townsend's Big-Eared Bat, Black-tailed Prairie Dog and Sage Grouse.

Black-Backed Woodpecker, Pileated Woodpecker and Peregrine Falcon have been documented within the latilong (L47) that encompasses the project area but it is unknown if they inhabit the project area. Sage Grouse occur within the cumulative effects analysis area, at least on a seasonal basis.

There is no documented use within the proposed project area for any of the remaining species. However there is potential for future, occasional, or incidental use by Gray Wolf, Canada Lynx and Grizzly Bear. A summary of the analysis can be found in Chapter IV "Endangered, Threatened and Sensitive Species"

A search of the Montana Natural Heritage Program database was conducted and two plant species of concern have been recorded. Jove's Buttercup (*Ranunculus Jovis*) found within the Metzel Creek quadrangle area and has been observed 1.5 miles northwest of the project area. Painted Milkvetch (*Astragalus Ceramicus* var. *Apus*) found within the Lower Red Rock Lake quadrangle area, which includes the project area, has been observed 1.5 miles south of the project area.

No plant species of special concern have been observed during general surveys within the State parcels.

11. Noxious Weeds:

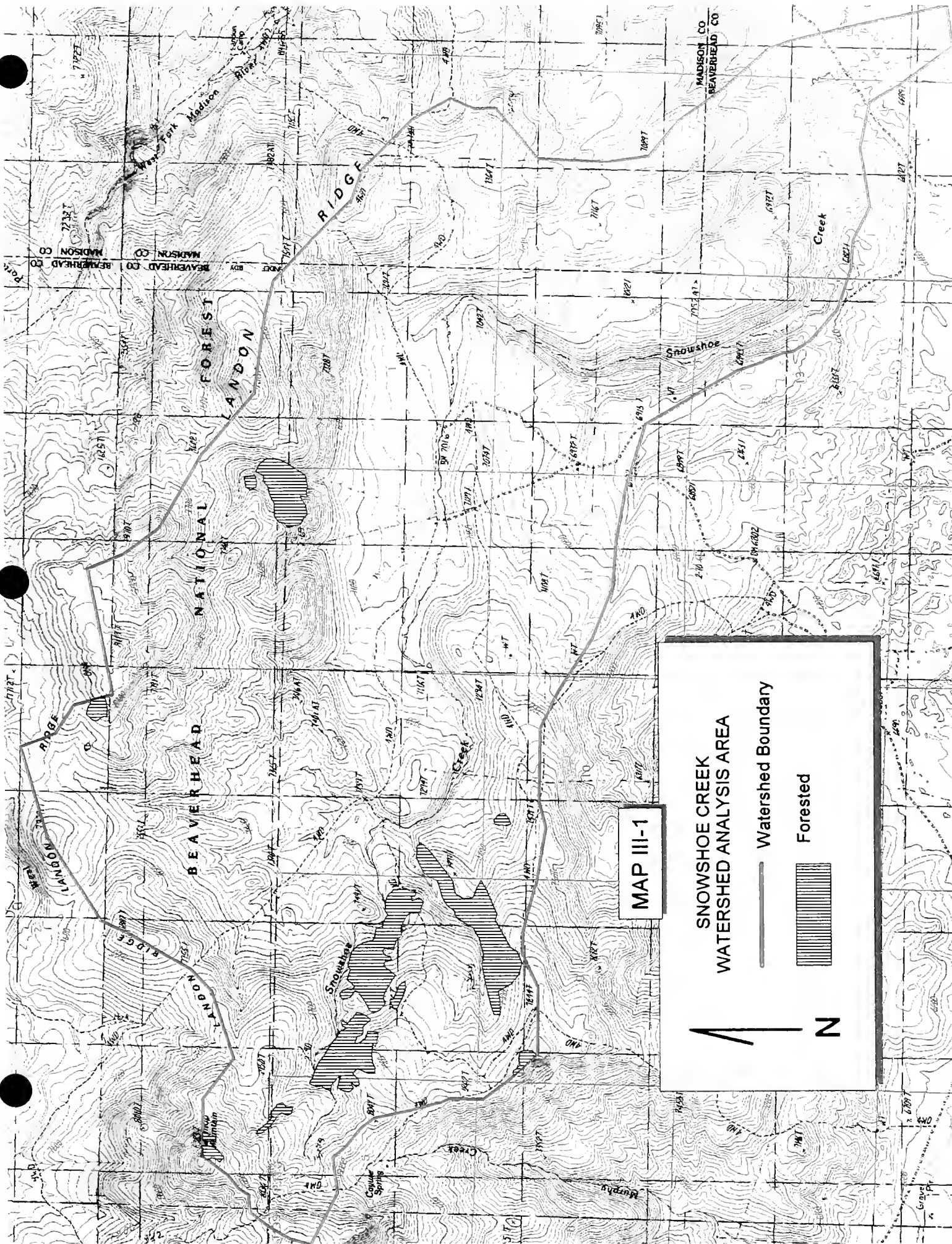
Currently there has been no noxious weed infestations detected on the State tract.

12. Transportation/Roads:

Existing roads are primitive two track, range type roads that historically have been used for ranching purposes and during the hunting season. The roads have been established over time, are poorly located and lack drainage or erosion control features. All roads on state lands within the project area are administratively closed to motorized vehicle use for recreational purposes. Roads on adjacent ownerships may be open, have seasonal restrictions or closed to motorized use. System roads that are open to the public are under the jurisdiction of the USFS, BLM and Beaverhead County. No system roads exist on the state ownership.

13. Recreation:

Persons holding a valid State Recreational Use License may hunt and conduct other recreational activities on the State tract. Public access is available on the State lands or by crossing the adjoining USFS, BLM and some private ownerships.

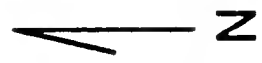


MAP III-1

SNOWSHOE CREEK
WATERSHED ANALYSIS AREA

Watershed Boundary

Forested





WILDLIFE ANALYSIS AREA



— Analysis Area Boundary



Forested





14. Grazing:

Historically the State tracts involved in the proposed timber harvest have been leased for grazing. 2,520 acres are currently leased for 817 Animal Unit Months (AUM's). Annual income from the grazing license is \$4,191.21.

15. Cultural Resources:

The proposed project was reviewed by the DNRC staff archaeologist for potential impacts to cultural resource sites. No cultural resource sites are known to exist in the project area therefore the proposed timber sale should have no effect on Heritage Properties.

16. Aesthetics:

The remote location of the proposed project area is not visible to any populated areas. The harvest system prescribed would create a mosaic pattern retaining ~30-40% of the merchantable volume and the majority of the submerchantable volume.

17. Economics:

Revenue producing activity associated with the tracts is grazing, which currently produces an estimated annual gross revenue of \$4,191.21.

Annually the DNRC analyzes the total costs, including general administration, of the timber sale program by land office and statewide. The following table displays the revenue-to-cost ratios for the state and Central Land Office. The revenue-to-cost ratios are a measure of economic efficiency. A ratio value less than 1.0 means that the costs are higher than revenues (deficit). A ratio greater than 1.0 means revenues are higher than costs (profit). A ratio equaling 1.0 means that cost equal revenues.

TABLE III – 3: Revenue-to-Cost Ratios Statewide and for the Central Land Office

	FY98	FY99	FY00	FY01	FY02
CLO	2.20	2.15	1.64	1.36	1.12
State	1.72	1.36	2.78	1.62	1.75

18. Landscape Analysis:

Three analysis areas were developed to assist in the process of evaluating the different resources and features in the vicinity of the proposed project area (see TABLE III - 5). The Watershed Analysis Area (Snowshoe Creek watershed) consisting of 7,407 acres was delineated for the analysis of potential watershed impacts. The Wildlife Cumulative Effects Analysis Area consisting of 5,760 acres, developed from the core block of sections surrounding Section 4 of the project area. The third analysis area is the State ownership where the project is proposed. The following data summary tables illustrate the overall statistics associated with each analysis area.

TABLE III – 4: Watershed Analysis Area By Ownership

	Acres	% of Ownership
Private	2672	36.1%
BLM	83	1.1%
USFS	1718	23.2%
State of Montana	2838	38.3%
Red Rock Lakes Nat'l Wildlife Refuge	96	1.3%

TABLE III – 5: Analysis Areas Summary

	Total Area (Acres)	Non-forested Area	Pre-harvest Forested Area	Area Harvested '77-'02	Existing Forested Area
Watershed Area	7,407	7,117 (96.9%)	230 (3.1%)	NONE	230 (3.1%)
Wildlife Area	5,760	5,300 (92%)	460 (8%)	NONE	460 (8%)
Project Area Sections 3, 4, 5, 9, 10 & 11	2,560	2,360 (92%)	200 (8%)	NONE	200 (8%)

C. *Elk Security and Vulnerability*

The Gravelly Range is an isolated range that occurs in southwest Montana. The southern end of the Gravelly Range lies just north of the Centennial Valley. This area is part of the FWP Gravelly Elk Management Unit (EMU) and includes Hunting District 327. Habitats found within Hunting District 327 range from grassland-sagebrush along foothills at lower elevations (~6,000 feet) to those at the highest elevations (up to ~9,500 feet) characterized by rocks, scree, whitebark pine and subalpine fir. Mature Douglas-fir and lodgepole pine forests dominate vegetation communities found at mid-elevations. Historic fire events likely contributed to a naturally fragmented patchy distribution of forest stands at the landscape level.

The following terminology is used to describe elk habitat values in the context of the project area and is consistent with Lyon and Christensen (1992).

Security - The protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other human activities.

Hiding Cover (functional def.) – Hiding cover allows elk to use areas for bedding, foraging, thermal relief, wallowing, and other functions year-round. Hiding cover may contribute to security at any time, but it does not necessarily provide security during the hunting season.

Elk Vulnerability – A measure of elk susceptibility to being killed during the hunting season.

Criteria for security cover developed for forests in western Montana by Hillis et al. (1991) requires a minimum of 250 acres of mature timber (contiguous and non-linear) that is $\geq 1/2$ mile from an open road during hunting season.

Timber harvest can increase elk vulnerability by changing the size, structure, juxtaposition and accessibility of areas that provide security during hunting season (Hillis et al. 1991). As visibility and accessibility increase within forested landscapes, elk have a greater probability of being observed and subsequently harvested by hunters. Because the cow segment of the harvest is normally regulated carefully, primary concerns are related to substantial reduction of the bull segment and

subsequent decrease in hunter opportunity. The presence of fewer mature bulls early in the hunting season reduces the odds of any given hunter to see or harvest such an animal throughout the remainder of the 6-week season. All forested stands within the project area and cumulative effects analysis area do not meet the Hillis et al. (1991) definition of security cover, due to their small size and accessibility by motorized vehicles. However, the forested patches in the project area have value for hiding cover, which can serve to lower bull elk vulnerability. Retaining the greatest amounts of dense forest cover possible would pose the least risk of increasing elk vulnerability from present levels. The greater numbers of elk that use a particular area, the more important cover patches are as they serve to reduce vulnerability of a greater portion of animals.

The project area lies within FWP Hunting district 327 and it occurs in important fall habitat for elk (B. Brannon, FWP, Letter, October 30, 2002).

Elk use has been documented in the project area (Hamlin and Ross 2002). Within this Elk Management Unit, FWP has a stated habitat objective (FWP 1992) to... "Work with land management agencies to maintain fall elk security so that elk harvest is distributed throughout the hunting season with no more than 40-45% of harvested bulls taken during the first week of the general season." This objective is stated to promote hunter opportunity, which is considered an important aspect of FWP's mission (FWP 1992:4). Bull elk vulnerability and potential reductions in hunter opportunity are a primary concern expressed by FWP in this hunting district and the Gravelly EMU. Achieving this goal can be hampered when available cover at the landscape level is reduced appreciably through timber harvest activities, road management, or natural disturbances, such as large scale stand-replacement wildfires.

Within the Gravelly EMU and Hunting District 327, the total acreage of cover patches that are greater than 247 acres was estimated to be 485,931 and 162,348 acres respectively (converted from data presented in Hamlin and Ross 2002:171). However, cover patches greater than 247 acres make up only 27.8% of the Gravelly EMU administrative area and 36% of Hunting District 327 (Hamlin and Ross 2002:171).

In the Gravelly EMU, the three-year average for the percentage of the bull harvest occurring during the first week of the general season was 54% for years 1999, 2000, 2001 (B. Brannon, FWP, Letter and data, October 30, 2002). Thus, bull harvest exceeded FWP objective for this area. Specifically, in hunting district 327, the three-year average for bull harvest during the first week of the general hunting season was 62%. Terrain in this hunting district is open and gentle, which allows relatively easy access

to motorized vehicles. Access considerations coupled with low hiding and security cover levels in this Hunting District offer challenges to managing elk populations and hunters (Hamlin and Ross 2002). Additional reductions in hiding cover and/or security habitat may influence achievement of FWP's harvest goal for this Hunting District and EMU.

CHAPTER IV – ENVIRONMENTAL EFFECTS

A. INTRODUCTION

This chapter will describe the probable effects of the various aspects of the affected environment as presented in Chapter III.

B. BACKGROUND

1. Forest Vegetation:

The No Action alternative would leave all vegetation undisturbed.

The Action alternative of harvesting 106 acres would alter 53% of the forested acres on the State tracts. Based on the total area of the State sections, the proposed alternative would alter the vegetation on an estimated 4% of the area. The areas affected would be harvested in a manner to regenerate a younger, healthy stand within 15-25 years.

2. Cumulative Impacts:

There has not been any harvest activities within the State of Montana ownership that would change or convert cover types to another classification.

To evaluate the cumulative impact of the proposed timber harvest on the State of Montana ownership, Losensky's data summaries for the Beaverhead and Madison Counties were compared with the inventory of state forested lands and anticipated changes under the Action alternative. The 106 acre Action alternative would move approximately 1.4% of the mature age class and 0.4% of the old growth age class cover types to the non-stocked\seedling age class. The data comparison also indicates that for either alternative, the forested stands for all cover types on the state land post-harvest would remain older than anticipated.

No harvesting has occurred within the Watershed Analysis Area in the last twenty-five years. Following the proposed harvest, total forested acres would be reduced by 1.4% of the analysis area.

3. Fire History / Ecology:

The No Action alternative would result in no appreciable change in the forest cover types or stand structures in the near term. Current successional patterns would continue. The stands would continue to be dominated by Douglas-fir, with a gradual trend to increase the number of more shade tolerant species, such as subalpine fir and spruce, in the understory. Tree mortality from potential insect and disease infestations would contribute to site factors that would be conducive to stand replacement fires. Such an event would likely revert the forest stands back to a grassland-sage cover type with a few scattered old remnant trees that would have survived due to micro-site conditions or location.

The Action alternative would not change the classification of forest types within the State of Montana section. Harvest treatments for all units would be primarily group selection and selection harvests focusing on leaving approximately 40% of the stand as individual seed trees or small clumps of trees. Regeneration harvests would be utilized in portions of the units where stand composition is predominantly subalpine fir, spruce and lodgepole pine. These treatments scattered across a landscape would emulate natural small-scale disturbance events. Harvest treatments would reduce the likelihood of stand replacement events from occurring by reducing stand susceptibility to insect and disease infestations and reducing fuel loads of the treated stands. Minor cumulative effects of shifts in age class distribution would be expected at the watershed level. The shifts would be towards age classes more typical of historic conditions.

4. Insect and Disease:

Under the No Action alternative all stands would be susceptible to Insect and disease infestations due to overstocked and/or multi-story conditions.

The Action alternative would reduce the potential of infestation in the harvested units with post treatment stands being less susceptible since primarily healthy, open stands would remain. Open stands where tree growth and vigor is encouraged and a variety of age classes are developed are more resistant to insect and disease infestations.

5. Successional Stages:

The No Action alternative would result in continued succession toward a climax vegetation condition unless fire or other disturbance intervened to move succession back to the non-stocked and seedling/sapling stage.

The Action alternative would move 106 acres of Douglas-fir and subalpine fir/spruce cover types, distributed over 5 units, to more open, healthier stands. The current older age structure of the stands would be converted to a younger age structure, more representative of historic conditions.

6. Old Growth:

The No Action alternative would result in no appreciable change in older stands and the present high representation of older trees over historic levels would continue.

The Action alternative would move the older stands to more historic conditions while still retaining the old growth attributes of the existing stands. Large live trees, snags and coarse woody debris, which are important attributes associated with old growth and future development of old growth, would be retained in sufficient quantities to meet or exceed the Rules. The harvest of old growth under this proposal would have a negligible effect on the percentage of old growth remaining on State lands in Beaverhead and Madison Counties.

7. Geology and Soils:

The No Action alternative would have little direct or cumulative effect on soil resources. Segments of existing range roads with inadequate drainage would continue to erode without maintenance.

Primary soil concerns are potential rutting, compaction or displacement associated with harvest operations and site preparation. Effects of tractor skidding harvest could cause direct effect of soil disturbance that could result in increased erosion and reduce soil productivity depending on the area and degree of soil effects. For the Action alternative, specific mitigation measures and BMP's would be implemented to minimize the area and degree of soil effects associated with proposed harvest. Mitigations include skid trail planning, placing drainage and woody debris on trails to control

erosion. The most sensitive soils are found on small wet sites, short steep slopes, and a small area (2-3 acres) of marginal slope stability, which would be avoided or protected with site-specific mitigation measures. Ground effects of harvest operations would be closely monitored. Soil effects would be minimal and long-term productivity would be maintained or improved by implementing mitigation measures, BMP's and reducing the stocking to make limited soil moisture and nutrients available to retained trees.

Cumulative effects could occur from repeated entries into the harvest area. Some past harvest by selective logging has left minimal effect on the soils, with only a few horse trails still evident. Skidding and slash disposal mitigation measures would limit the area impacted and therefore presents low risk of cumulative effects. Future stand entries in uneven aged stands would use existing trails and landings. A proportion of large woody debris would be retained to help reduce erosion, and maintain nutrient cycling and long-term productivity.

Chapter II – C.1. "Mitigation Measures For Action Alternative" includes measures that would help minimize risk of impacts to soils during the proposed activities. These mitigation measures are standard practices that may be applied to all harvest activities associated with the proposed Patchtop Timber Sale. Recommended site-specific, contract design mitigation measures would be provided following the selection of an alternative.

8. Watershed and Fisheries:

Conditions under the No Action alternative would be similar to existing conditions. Several segments of existing road within the affected watershed do not fully comply with Best Management Practices (BMPs) due to lack of drainage features and maintenance. Under no action, some of the existing road segments may contribute sediment to the stream because no improvements, mitigation, or remedial action measures would be implemented.

A review of recent aerial photography indicates that only 3.1% of the Snowshoe Creek watershed is forested. The remaining land area in the drainage consists of rangeland and non-forested mountain foothills. Therefore, the small amount of existing forest crown canopy contained in the watershed has very little influence on the timing, duration or magnitude of

runoff produced from the watershed. The levels of potential increase in offsite water yield resulting from the proposed harvest and road/skid trail construction are expected to be negligible.

Cumulative impacts due to water yield increases in Snowshoe Creek are not anticipated to result from the actions proposed under the Action alternative.

Land management activities such as road construction, maintenance and use, and timber harvest could potentially increase levels of fine sediment delivery to streams if not properly located, designed and mitigated. The primary risks to water quality that are associated with the proposed timber harvest are roads, especially roads located along or crossing streams. Risk of erosion and sediment delivery are highest when roads are located in areas with inadequate buffering between streams and other drainage features, on erosive soils, or on steep and/or unstable slopes. A lack of periodic maintenance, inadequate surface drainage features, and use during wet periods or conditions may also contribute to higher risk.

All existing roads and proposed new road locations within and accessing the timber sale area have been reviewed by a DNRC hydrologist and soil scientist. The existing roads and proposed road locations were evaluated to determine both existing and potential risk of erosion and sources of sediment delivery to streams. Many of the existing roads within the proposed sale area do not fully comply with minimum BMPs. Several of these existing road segments would continue to be a source of future erosion and potential sediment delivery to streams unless improvements and mitigation measures are implemented.

Under the proposed Action alternative, 6.1 miles of existing road would be improved to a standard that complies with minimum BMPs. These improvements are expected to result in reduced erosion and decreased potential for sediment delivery to streams or ephemeral draw features within the affected watershed.

Approximately 2.8 miles of new road would be constructed under the proposed action. Almost all of the proposed new road would be located on slope positions or in areas that do not have direct surface runoff or concentrated flow to streams or other bodies of water. These road segments are located on gentle to moderate slopes with soils that have low to moderate erosion hazard and well

buffered from streams. There is low risk of sediment delivery to result from construction and use of these road segments. Furthermore, the new road would be closed after harvest activities were completed with barriers at select locations and slash where possible.

There are three new stream crossings associated with the proposed road construction. All of these crossing are located on intermittent tributaries to Snowshoe Creek. Only one of the proposed crossings is located on a stream channel that is contiguous with delivery to Snowshoe Creek. Some short-term increases in sediment delivery to Snowshoe Creek may occur during and/or shortly after the construction of this stream crossing. Application of BMPs, site-specific design and mitigation measures are expected to reduce erosion and potential sediment delivery to an acceptable level as defined under the Montana Water Quality Standards. Acceptable levels are defined as those conditions occurring where all reasonable land, soil, and water conservation practices have been applied. The levels of potential short-term sediment delivery expected to occur at this site is not high enough to seriously degrade water quality. The other two tributaries are discontinuous below the proposed road crossing sites. No impacts to downstream beneficial uses due to increased sediment delivery to Snowshoe Creek from any of these stream crossings are anticipated.

The other two stream crossings are located on small, unnamed, intermittent and discontinuous tributaries to Snowshoe Creek. There is low risk of sediment delivery to Snowshoe Creek occurring from these crossing sites.

All proposed harvest stands have also been reviewed and evaluated in the field by a DNRC hydrologist and soil scientist. Selection of appropriate harvest and yarding systems, operating seasons, limiting equipment operations to suitable slopes or designated trails and appropriate ground conditions, and implementation of appropriate BMPs and mitigation measures would be used to reduce the risk and severity of soil erosion and potential sediment delivery to streams and ephemeral drainage features. Streamside management zones and equipment restriction zones would be designed to effectively buffer streams and other ephemeral drainage features from harvest activities. No sediment delivery to streams is expected to result from timber harvest operations.

Snowshoe Creek does not support a fishery. The proposed actions are not expected to harm aquatic habitat since streamside management zones would be maintained, expected water yield impacts are very low, and road construction would follow BMPs to reduce the risk of sediment delivery to the stream. No impacts to downstream fisheries or fish habitat in Tepee Creek, or Red Rocks Lake are anticipated.

In conclusion, no substantive direct, indirect, or cumulative impacts to water quality, and no impacts to downstream beneficial uses are expected to result from the proposed Action alternative.

9. Fragmentation and Corridors

Under the No Action alternative, habitat conditions would not change in the near term from their current condition. Forested habitat patches within the project area would remain at their current size and shape and offer the greatest level of habitat security and lower proportional amounts of edge habitat. Wildlife species adapted to use larger patches of mature forest would be expected to benefit from this alternative, albeit slightly as existing forest patches are inherently small. Over time, influences of forest succession would be expected to decrease habitat availability for species that are adapted to thrive in open forest and edge habitats, or for those that use such habitats for meeting their life requisites.

Under the Action alternative, harvest would occur in five harvest units totaling 106 acres. Thus, an increase in the amount of open, park-like forest would occur in harvested areas. Species of wildlife preferring less dense forest conditions would benefit from creation of additional habitat, whereas species adversely affected by decreased forest density would not. Due to the small number of acres harvested, expected effects would be minor. Endemic species that occur in this area would likely not be affected appreciably, as most likely evolved with naturally fragmented forest conditions, created by natural disturbance events. The proposed 2.8 miles of constructed road would have minimal expected adverse impact on fragmentation of habitat or increases in human activity as it would primarily be situated in grassland habitat and it would be physically obstructed and effectively closed upon project completion. Cumulative fragmentation effects associated with this project would be minor as other appreciable amounts of harvestable timber are absent within the cumulative effects analysis area. Average patch size of existing forested acreage

would be reduced little within the project area as the general configuration of patches would be retained. Within-stand density and forest canopy structure, however, would be reduced.

Cumulative effects related to the proposed road construction on the project area would be minimal due to the small area affected and partial closure that is planned upon project completion. No known wildlife corridors of notable importance would be affected by the proposed activities.

10. Threatened, Endangered and Sensitive Species:

Bald Eagle: Forested habitat within the project area occurs >4 miles from bodies of water of suitable size for use by nesting or perching eagles (i.e., Lower and Upper Red Rocks Lakes). Thus, habitat found within the project area is too distant to provide ample foraging opportunities and it is not suitable. Impacts to bald eagles would not be expected as a result of the alternatives considered.

Grizzly Bear. The project area is situated approximately 17 miles west of the Greater Yellowstone Ecosystem Grizzly Bear Recovery Zone. In recent years, grizzly bears have been documented ranging greater distances outside of the Yellowstone Ecosystem. Grizzly bears have occasionally been documented in the vicinity of the project area and the project area lies within a zone considered as occupied by an interagency Grizzly Bear Study Team (interagency map dated September 2002). As such, the lands in the general vicinity of Red Rocks Lakes were identified as those where one would reasonably expect to find grizzly bear use occurring during most years – as of 2002. DNRC is not aware of any specific observations of grizzly bears associated with the project area, however, periodic or transient use is possible.

The project area is comprised of approximately 200 acres of coniferous-forest habitat and 440 acres of grassland habitat (dot grid estimation). Within the nine-section cumulative effects analysis area centered about the project area (5,760 acres), approximately 460 acres (8%) of coniferous forest is present in relatively small patches (<100 acres). Hiding cover in mature forest stands is fair to good with sight distances ranging from ~20 to 300 feet. A small creek (Snowshoe Creek) runs diagonally through Section 4, which possesses limited hiding cover and visual screening. The value of habitat contained in the project area overall is low for grizzly bears as forest patches are isolated from other suitable habitat, habitats are relatively dry, and desirable bear

foods are not prevalent.

Under the no action alternative, vegetation would not be altered as a result of forest management activities and no additional road construction or disturbance would occur. No additional risk to bears would occur under this alternative.

Under the action alternative, proposed harvest operations that could occur during a portion of the non-denning season (June 15 to October 31) would result in minor direct, indirect or cumulative risk to bears, should they occur in the area. Greatest risk would be for direct displacement of bears occurring in the project vicinity into surrounding areas of lesser disturbance. However, the likelihood of bears spending appreciable time in the project area or cumulative effects analysis area is low due to relatively poor habitat quality present. The project would be completed within two operating seasons, with the majority of logging activity occurring within one season. Risk of any additional indirect effects associated with hiding cover reduction on 106 acres would be minor. Construction of ~2.8 miles of additional roads would cumulatively increase existing road densities on the project area and surrounding ownerships in the vicinity. However, these roads would be physically closed upon project completion. Thus, long-term security for bears would be minimally influenced. Portions of stands within riparian areas will not be entered, and moderately to densely-stocked mature patches will be maintained where opportunities exist along Snowshoe Creek to provide for visual screening. Cattle grazing occurs on the project area and surrounding private ownerships, which represents a minor existing cumulative risk to bears, should they occasionally use the project area or surrounding lands during periods of proposed activity.

Gray Wolf: The project area lies within the Yellowstone Nonessential Experimental Area for gray wolves. Parcels involved in the project are situated at the southernmost end of the Freezeout pack's home range documented for 2001 and 2002. Individuals from this pack or transients from other packs could occasionally use portions of the project area or cumulative effects analysis area. However, due to the size, nature, duration, and location of the proposed harvest, neither of the alternatives considered (No Action and Action) would be expected to directly, indirectly, or cumulatively effect wolves or recovery efforts (J. Fontaine, USFWS Biologist, Pers. Comm. 6/17/03). Should a new den be located within one mile of any proposed harvest units,

activities would cease and a DNRC Biologist would be contacted immediately. Mitigations would then be developed and implemented to minimize adverse impacts to wolves prior to initiating harvest activity.

Canada Lynx: Lynx habitat is present in the Gravelly Mountain Range, however, the project area contains a small amount of forested habitat (~200 acres), which is relatively isolated from other sizable expanses of suitable lynx habitat. Other suitable habitat patches greater than 100 acres in size occur on National Forest lands approximately 1.5 miles to the north of forested stands found within the project area. However, within the nine-section cumulative effects analysis area comprising 5,760 acres, approximately 460 acres (8%) of coniferous forest occurs in isolated, small patches (<100 acres). Microsites relatively high in coarse woody debris abundance that occur in subalpine fir habitat types preferred by lynx occur within the project area. However, potential for denning is poor due to the lack of suitable lynx foraging habitat within the cumulative effects analysis area. Within the cumulative effects analysis area overall, lynx habitat is marginal due to the lack of desirable habitat conditions for lynx and their primary prey – snowshoe hares. Due to the generally low suitability of habitat in the project area and cumulative effects analysis area, direct, indirect or cumulative impacts to lynx would not be expected to occur as a result of either of the alternatives considered.

CHECKLIST FOR DNRC SENSITIVE SPECIES

DNRC Sensitive Species	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below)
Flammulated Owl (<i>Otus flammeolus</i>) Habitat: late-successional ponderosa pine and Douglas-fir forest	[N] Flammulated owls have not been documented in the latilong (L47) that the project area lies within (Skaar 1996). The parcel involved in this project maintains elevations that range from about 7,400-8,000 feet and cool, dry Douglas-fir cover types characteristic of this area are not preferred habitat for flammulated owls. Direct, indirect and cumulative effects to flammulated owls would not be expected to occur under the alternatives considered.

<p>Black-Backed Woodpecker (<i>Picoides arcticus</i>) Habitat: mature to old burned or beetle-infested forest</p>	<p>[N] Black-backed woodpeckers have been documented within the latilong (L47) that encompasses the project area (Skaar 1996). However, stands found within the project area are not presently experiencing substantial insect activity, and no recent burns (≤ 5 years old) occur within the project area or cumulative effects analysis area. Thus, foraging and nesting opportunities are presently limited. No direct, indirect or cumulative effects to black-backed woodpeckers would be expected to occur as a result of this project.</p>
<p>Pileated Woodpecker (<i>Dryocopus pileatus</i>) Habitat: late-successional ponderosa pine and larch-fir forest</p>	<p>[N] One transient pileated woodpecker observation was reported within the quarter latilong (L47A) that encompasses the project area in 1995 (Skaar 1996, MNHP 2003). However, the project area is poorly suited for use by pileated woodpeckers due to limited habitat availability. As suitable habitat is not present in the project area or cumulative effects analysis area, no impacts to pileated woodpeckers would be expected to occur as a result of this project.</p>
<p>Northern Bog Lemming (<i>Synaptomys borealis</i>) Habitat: sphagnum meadows, bogs, fens with thick moss mats</p>	<p>[N] No sphagnum meadows or bogs occur in the project area. Thus, no impacts to bog lemmings would be expected to occur as a result of this project.</p>
<p>Harlequin Duck (<i>Histrionicus histrionicus</i>) Habitat: white-water streams, boulder and cobble substrates</p>	<p>[N] No high gradient streams suitable for use by harlequins occur within the project area or cumulative effects analysis area. No impacts to harlequin ducks would be expected to occur as a result of this project.</p>
<p>Peregrine Falcon (<i>Falco peregrinus</i>) Habitat: cliff features near open foraging areas and/or wetlands</p>	<p>[N] A breeding pair of peregrine falcons was documented within the quarter latilong (L47A) that encompasses the project area in 1995 (MNHP 2002). However, no cliff features suitable for use by nesting peregrine falcons occur within 1 mile of the project area. Thus, no direct, indirect or cumulative effects associated with this project are anticipated.</p>

Mountain Plover (<i>Charadrius montanus</i>) Habitat: short-grass prairie, alkaline flats, prairie dog towns	[N] Mountain plovers have not been documented in the latilong (L47) that the project area lies within (Skaar 1996, MNHP 2003). No short-grass prairie or prairie dog towns occur on, or within one mile of the project area. No impacts to mountain plovers are expected as a result of this project.
Townsend's Big-Eared Bat (<i>Plecotus townsendii</i>) Habitat: caves, caverns, old mines	[N] The DNRC is unaware of any mines or caves within the project area or close vicinity that would be suitable for use by Townsend's big-eared bats. Thus, impacts to Townsend's big-eared bats are not anticipated as a result of this project.
Black-tailed Prairie Dog (<i>Cynomys ludovicianus</i>) Habitat: grasslands, short-grass prairie, sagebrush semi-desert	[N] The project area is situated outside of the distribution of black-tailed prairie dogs. Thus, impacts to black-tailed prairie dogs are not anticipated.
Sage Grouse (<i>Centrocercus urophasianus</i>) Habitat: sagebrush semi-desert	[N] Breeding sage grouse have been documented in the latilong (L47) that the project area lies within (Skaar 1996). Sage grouse occur within the cumulative effects analysis area, at least on a seasonal basis (A. Martinell, Private Landowner, Pers. Comm. June 2003). However, no sage grouse breeding leks are known to occur within the cumulative effects analysis area or project area. Should sage grouse be present in the vicinity of the project area, any effects to habitat or disturbance-related effects would be expected to be minimal, due to the late start-up date of activities (i.e., June 15), and preferred sagebrush habitat would not be appreciably altered. Impacts to sage grouse would not be anticipated.

11. Noxious Weeds:

Under the No Action alternative, noxious weeds could become established on 4 wheel drive roads and onto dry vegetation sites by vehicle or animal use, depending on the weed control efforts of the grazing lessee.

The Action alternative would involve ground-disturbing activities that have the potential to introduce or spread noxious weeds in susceptible habitat types. An Integrated Weed Management (IWM) approach, combined with prevention and revegetation, is considered the most effective weed management treatment. To reduce the possible introduction and spread of weeds associated with this project; mitigation measures to address the management of weeds are included in Chapter II – C.1. “Mitigation Measures For Action Alternative”.

12. Transportation and Roads:

Under the No Action alternative, roads would remain in there primitive conditions and road densities for the analysis areas would remain at present levels. Sedimentation from road sources is expected to continue.

The implementation of the Action alternative would construct 2.8 miles of new road and increase the road density an additional 0.3 miles per square mile (based on the Wildlife Cumulative Effects Analysis Area). Selected segments of the existing roads would be improved through implementation of mitigation measures. Selected segments of the new construction would be effectively closed through obliteration and slashing. This closure process would result in no net increase of open roads in the area.

The existing roads on State lands would remain administratively closed to motorized vehicle use for recreational purposes to meet departmental management objectives for resource protection and assist with FWP elk management goals.

13. Recreation:

Since non-motorized recreational activities are allowed on the State of Montana tracts and the existing access would not be altered, the proposed Action alternative would not affect the recreational status of the tracts.

14. Grazing:

The Action alternative would not affect the grazing lease that is currently established on the State tracts.

15. Cultural Resources:

Since no cultural resource sites would be impacted and no additional investigative work is recommended there would be no effects expected from the initiation of the Action alternative as proposed.

16. Aesthetics:

Due to the remote location of the proposed project and the residual stand anticipated from the prescribed harvest system, the initiation of the Action alternative would not affect the visual quality.

17. Economics:

Economic Assumptions:

- a) Costs and revenues are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return.
- b) The estimated stumpage value equals the delivered log prices minus costs and an amount for profit and risk. Costs include logging costs, haul costs, forest improvement (FI) fees, development costs, and other costs (e.g., road maintenance, access fee). Profit and risk is the return to timber buyer that accounts for actual time and effort, some profit for entrepreneurial spirit, and something to cover the expected losses on an occasional sale that is not profitable.

TABLE IV – 1: Estimated Stumpage \$/MBF for Action Alternative

	Action Alternative
Delivered Log Prices \$/MBF	\$ 441.12
*Logging Cost \$/MBF	\$ 134.00
Haul Cost \$/MBF	\$ 122.95
**Development Cost \$/MBF	\$ 44.47
FI Fee \$/MBF	\$ 15.50
Profit & Risk (5% of Delivered Log Prices) \$/MBF	\$ 22.06
Estimated Stumpage \$/MBF	\$ 102.14
*Cost based on harvest volumes.	
**Cost includes access fee and mobilization.	

- c) The estimated gross revenue to the trust is calculated by multiplying the estimated stumpage price by the estimated volume. The state also collects money for Forest Improvement (FI). The estimated total collected FI equals the FI fee rate multiplied by the estimated volume. The following table displays the estimated revenue to the state from this proposed sale.

TABLE IV – 2: Estimated Gross Revenue to the Trust and Total Collected Forest Improvement (FI) Fee for Action Alternative

	Action Alternative
Est. Total Volume (MBF)	1130
Est. Gross Revenue to the Trust	\$ 115,418
Est. Total Collected FI fee	\$ 17,515

18. Landscape Analysis:

The following data summary table of the three analysis areas illustrates the overall statistics associated with each analysis area.

TABLE IV – 3: Analysis Areas Data Summary of Affects

	Total Area (Acres)	Total Forested Area	% of Total Area Affected	% of Total Forested Area Affected
			Action Alternative	Action Alternative
Watershed Area	7,407	230	1.4%	46%
Wildlife Area	5,760	460	1.8%	23%
Project Area Sections 3, 4, 5, 9, 10 & 11	2,560	200	4.1%	53%

C. *Elk Security and Vulnerability*

1. Effects on Elk Security and Vulnerability:

No Action Alternative:

Under this alternative, no immediate change from the present condition would occur. Hiding cover and access would remain essentially unchanged. Over time, and in the absence of wildfires, conifer cover would continue to mature and develop into dense forest, further increasing amounts of hiding cover and size of potential security blocks. The extent to which forested areas such as those occurring on the project area may serve as sink source habitats (Pullium 1988) for elk is unknown. Given available local information, selection of this alternative is presumed to provide the lowest risk of increasing elk vulnerability over the short term and over the long term (>20 years) in the absence of wildfires or other natural disturbance agents. Subsequently, it is expected that bull elk survival and hunter opportunity would have the least risk of being impacted under this alternative.

Action Alternative:

Under this alternative, ~ 106 acres of hiding cover would be altered, reducing that which would be available to elk during the general hunting season. In conjunction with harvest activities, the proposed new road segments would be physically closed and obstructed to minimize the potential for increased motorized access from existing levels. This would likely have a minor influence on mitigating elk vulnerability within the cumulative effects analysis area, due to the high inherent accessibility of the open terrain.

Visual screening properties of hiding cover would change considerably in all harvest units. Following proposed harvest, visual obstruction would be provided by smaller patches and stringers of mature and sub merchantable trees than the larger, dense patches, which currently exist in the project area. Leave trees will be retained in a clumped distribution to minimize sight distance where opportunities exist. Mature forest could have hiding cover value reduced by up to 90% in some treated portions. Across all stands, basal area of mature trees would be reduced by approximately 60%. Hiding cover value would likely be reduced by a similar proportion. Connectivity of forest patches to other nearby mature forest, would remain poor as stands in the project area are naturally isolated. Reducing 106 acres of hiding cover would potentially represent

a 23% cumulative reduction within the Wildlife Cumulative Effects Analysis Area. Thus, low to moderate proportional increases in elk vulnerability could be expected for elk that use this area.

2. Cumulative Effects:

Within the context of Hunting District 327 and the Gravellys EMU, cover removal associated with this project would result in a minor adverse contribution to cumulative effects, but would be additive to other timber harvests occurring within these administrative boundaries on state trust lands and other ownerships. This could result to some degree, in increasing the difficulty that FWP could have in meeting their Elk Plan objective for maintaining bull harvest below 40-45% during the first week of the general big game hunting season. Effects associated with this proposal would likely be difficult to detect in the population at the Hunting District level. However, over a broader cumulative acreage considered at the EMU scale, risk of hunter harvest rate increases during the first week of the general hunting season is present until recovery of hiding cover and/or security cover can occur. Recovery of forest cover in this area can take several decades to a century, depending upon growing conditions of a site and the intensity of the treatment implemented. Other DNRC timber sales within the Gravellys EMU that have been proposed or have occurred during the last 10 years are listed in Table IV-4. Any potential direct disturbance or displacement of elk due to harvest operations would be minor and of short duration (i.e., two operating seasons with the majority of logging activity occurring within one season).

The access route to the proposed project area would require ~2.8 miles of new road construction. Open road densities are already high and cover capable of providing security is minimal in this area. The access route, if left open following use, however, would increase elk vulnerability in the area. The actual extent of increase is uncertain as many factors can influence vulnerability (e.g. size, extent and juxtaposition of security areas and migration corridors; type, structure, amount and density of vegetation; road density; ease of human accessibility, hunting pressure, hunting regulations, and hunter behavior, etc.) (FWP 1992:8). Variations in weather conditions from year to year can also influence elk vulnerability. However, elk that might use this area would likely have a greater potential for vulnerability if the route were to remain accessible. By implementing mitigation efforts such as obliterating/recontouring the road surface, scattering slash and seeding, motor vehicle and foot travel on this route would dramatically decrease. Minimal cumulative influences on access would be anticipated following road obliteration efforts. Livestock grazing also occurs on the State parcels, however, measurable

adverse effects associated with timber management and grazing in combination are not anticipated.

TABLE IV - 4: DNRC timber sales within the Gravellys EMU from 1993 to 2003

Timber Sale Name	Acres¹	Status	Hunting District
Hoffman Gulch	104	Completed	326
Tepee Creek	238	Completed	327
Idaho Creek	82	Completed	330
Wilcox Creek	43	Completed	322
West/Middle Fork Blacktail Creek	1,102	Completed	325
Trout Creek	61	Completed	322
Brown's Gulch	60	Ongoing	330
Long Cottonwood	376	Proposed	325
Alaska Basin	302	Proposed	327
Basin Creek	126	Proposed	325
Total	2,494	N/A	N/A

¹ Acreages are approximate.

LIST OF INDIVIDUAL SCOPING NOTICES

Friends of the Wild Swan, Swan Lake, MT
Greater Yellowstone Coalition, Bozeman, MT
MT Ecology Center, Missoula, MT
Alliance for the Wild Rockies, Missoula, MT
American Wildlands, Bozeman, MT
National Wildlife Federation, Missoula, MT
Montana Audubon Council, Dillon, MT
Montana Wilderness Association, Helena, MT
American Fisheries Society, Bozeman, MT
Pintlar Audubon Society, Twin Bridges, MT
MWF, Helena, MT
Anaconda Sportsmen, Anaconda, MT
Skyline Sportsmen's Assoc. Inc., Butte, MT
Montana Coalition for Appropriate Management of State Lands, Butte, MT
Southwest Montana Wildlands Alliance, Butte, MT
Montana Access for Action, Ramsay, MT
Beaverhead County Resource Use Committee, Dillon, MT
Tribal Historic Preservation Office, Pablo, MT
U S Department of Interior, BLM, Dillon, MT
USFS – Madison Ranger District, Ennis, MT
USFS – Dillon Ranger District, Dillon, MT
Montana FW P, Bozeman, MT
Office of Secretary of State, Helena, MT
Red Rock Lakes National Wildlife Refuge, Lima, MT
University of Montana, School of Forestry, Missoula, MT
Matador Ranch, Dillon, MT
Stuart Lewin, Great Falls, MT
Evan Huntsman, Dell, MT
Trapp Livestock Co., Alder, MT
Lee Martinell Co., Dell, MT
Volker & Lois Saier, Ennis, MT
Centennial Livestock, Dillon, MT
Jerry Jackson, Billings, MT
Patchtop Social Club, Billings, MT
Bill Quesenberry, Billings, MT
Olin Forrester, Billings, MT
Louisiana Pacific Corporation, Deerlodge, MT
R-Y Timber Inc., Townsend, MT
Mt. Wood Products Association, Helena, MT
Plum Creek Timber Co., Columbia Falls, MT
F H Stoltze Land & Lbr., Columbia Falls, MT

DNRC Forest Management Bureau, Missoula, MT
DNRC Archaeologist, P. Rennie
DNRC Soil Scientist, J. Collins
DNRC Supervisor Resource Management, G. Frank
DNRC Wildlife Biologist, R. Baty
DNRC Agriculture & Grazing, K. Chappell
DNRC Public Information Officer, D. Bushnell

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Richard Moore	Unit Manager, DNRC Dillon
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FINDING

DNRC – DILLON UNIT PATCHTOP TIMBER SALE PROPOSAL SECTIONS 3, 4, 5, 9, 10, 11, TOWNSHIP 13S, RANGE 2W

March 24, 2004

INTRODUCTION

The Patchtop Timber Sale proposes the harvest of approximately 1,130 MBF of timber from 106 acres located on State owned land in Sections 3, 4, 5, 9, 10, and 11, T13S, R2W. Five harvest units, ranging in size from 14 to 27 acres, would be managed using a group selection/tree selection harvest. The sale area is located in Beaverhead County approximately 50 air miles southeast of Dillon, Montana. An estimated 2.8 miles of new road would need to be constructed and 2.1 miles of existing road reconstructed. All roads on State ownership, and some roads on private ownership, would be closed to motorized vehicles after harvest activities are completed.

An Environmental Assessment (EA) was completed for the proposed Patchtop Timber Sale in March 2004.

After reviewing the EA, project file, correspondence, and the State Forest Land Management Rules 36.11.401 through 36.11.450, Administrative Rules of Montana, the following decisions have been made concerning this project.

ALTERNATIVE SELECTED

Two alternatives were presented and were fully analyzed in the EA, the Action Alternative Patchtop and the No-Action Alternative. Two additional alternatives were considered early in the process but were dismissed due to a variety of environmental and economic concerns.

Alternative A - No-Action:

DNRC would not conduct forest management activities at the present time including road construction, road improvements, and additional weed control or monitoring. Recreational use, grazing leasing, and wildland fire suppression activities would continue.

Alternative B - Action Alternative Patchtop:

The proposed harvest of approximately 1,130 MBF of timber from 106 acres of State owned land. Five harvest units, ranging in size from 14 to 27 acres would be managed using a group selection/tree selection harvest. An estimated 2.8 miles of new road would be constructed and 2.1 miles of existing road would be reconstructed. All roads on State ownership would remain closed to motorized vehicles after logging activities are completed.

I have selected Alternative B - Action Alternative Patchtop because I believe this alternative can be implemented in a manner that is consistent with the long-term sustainable natural resource management of the area while promoting forest diversity, maintaining a semblance of historic conditions and generating revenue for the school trust from timber harvest.

SIGNIFICANCE OF IMPACTS

Based upon my review of the information provided in the EA and the project file, I conclude all identified potential impacts would be avoided or mitigated by project design and consequently significant impacts would not occur as a result of implementing the selected alternative. Therefore, an Environmental Impact Statement will not be prepared. I base this decision on the following considerations:

Water Quality, Water Yield, and Soils: Proposed harvest units and roads have been located and designed to avoid unstable soils. All existing and new road locations have been reviewed and evaluated by DNRC specialists and all roads will be improved to comply with BMP's. All five intermittent stream crossings will be installed applying BMP's and site-specific design and mitigation measures. Reconstructing existing roads to comply with BMP'S will reduce existing erosion and potential sediment delivery to streams. None of the intermittent streams associated with the project activities support fisheries.

Elk Security and Vulnerability: The project area has gentle terrain that does not provide a high degree of security cover for elk during the hunting season. The Department of Fish, Wildlife, and Parks (DFWP) has had difficulty attaining it's objective of distributing elk harvest throughout the hunting season so no more than 45% of the harvested bulls are taken the first week of the general season. The proposed project does not include defined elk security cover due to the small size of contiguous forested acreage. The project area however does provide hiding cover and temporary refuge for elk during the season. Harvesting timber under the proposal will likely increase the difficulty the DFWP has in reaching it's objectives in the Elk Management Plan but to an imperceptible extent even when considering the cumulative effect of other timber harvests.

The project area represents an extremely small percentage of the Elk Management Unit and hunting district. There is approximately 460 acres of small (<100 acres in size), isolated, scattered forest habitat providing quality hiding cover on the wildlife analysis area. Historic fire events and terrain features have likely contributed to a naturally fragmented and patchy distribution of forested stands on the landscape in the wildlife analysis area. Higher elk hunter success rates may occur for the next several years while young forest stands become established and attain sufficient size to provide more elk hiding cover.

Fragmentation/Corridors: Existing forest cover exhibits a low level of habitat connectivity across a network of sparse to densely forested stringers and habitat patches. Historic fire events and terrain features have likely contributed to a naturally fragmented and patchy distribution of forested stands on the landscape in the wildlife analysis area. An increase in the amount of open park-like forest would occur in harvested areas. No known wildlife corridors of notable importance occur within the project area would be affected by the proposed activities.

Public Access: Motorized public access would remain the same after the project is completed as it was before the project. Selected segments of the new roads will be effectively closed to motorized vehicles with road obliteration and slash for resource protection and to assist with DFWP elk management goals.

Threatened, Endangered, and Sensitive Species: The project area lies 17 miles west of the Greater Yellowstone Ecosystem Grizzly Bear Recovery Zone. While there have been no specific observations of grizzly bears in the area, periodic or transient use is possible. Due to relatively poor habitat quality in the area, the likelihood of bears spending appreciable time in the area is low. With the short project length of two operating seasons, and new roads being physically closed to

motorized vehicles upon project completion, any long-term security for grizzly bears would be minimally influenced.

The project area lies within the Yellowstone Nonessential Experimental Area for gray wolves. Due to the size, nature, duration, and location of the project activities, no direct, indirect, or cumulative effects to the wolves or recovery efforts should occur. Should a new den be located within one mile of a harvest unit, all activities would cease and a DNRC biologist would be contacted immediately to develop mitigation measures to minimize adverse impacts to wolves.

Preferred Canada lynx habitat is not present in the project area. The project area does not contain suitable habitat or contains low quality habitat for bald eagle. Impacts to these species would not be expected as a result of the Action Alternative.

The DNRC maintains a list of sensitive species for which a fine filter habitat analysis is conducted on proposed forest management projects. The sensitive species list includes: flammulated owl, black-backed woodpecker, pileated woodpecker, northern bog lemming, harlequin duck, peregrine falcon, mountain plover, Townsend's big-eared bat, black-tailed prairie dog, and sage grouse. There is no documented use within the project area for any of the sensitive species except for the pileated woodpecker, sage grouse, and peregrine falcon. These species have been documented within the quarter latilong (Skaar 1996) that the project area lies within. As suitable habitat is not present within the project area for the woodpecker or falcon, no direct, indirect, or cumulative effects are expected to occur as a result of this project. Although sage grouse are present within the project area, no leks are known to occur within the project area.

Upon execution, this Finding becomes part of the Final Environmental Assessment for the Patchtop Timber Sale Proposal.

Signed:

Richard A. Moore

Dated:

3/24/04

Richard A. Moore
Dillon Unit Manager

